

FOREST CONTROL *by* CONTINUOUS INVENTORY

"Today I have grown taller from walking
with the trees."

...Karle Wilson

Milwaukee, Wis. November, 1964 No. 128

BE THANKFUL!

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JIM JOHNSON ON THE JOB

Snow, wind, rain and cold weather did their dismal best during the month of October, to stall and slow the CFI in progress at Ford Forestry Center. But the elements failed of their poor purposes. With Jim Johnson on the job, weather never has the slightest chance of delaying worthwhile woods work.

Professor Johnson is Forester at Michigan Tech's Ford Forestry Center, L'Anse, Michigan, and CFI is only one of his many jobs there. Working with him in person on more than 100 growth plots of the establishment vintage 1938, has been one of this year's greatest pleasures for me.

I have come to the wholesome conclusion that Jim Johnson is one of the best dirt foresters and CFI cruisers I know. And I know a great many good ones. Jim accomplishes work above average in quantity and quality each working day in the woods because his legs are always flailing the brush and undergrowth. He is always moving ---- moving ---- moving and watching, looking, observing. The average walking distance to complete a fifth-acre plot is 20 chains or a quarter mile. I am sure that Jim's plot mileage exceeds this, and for very good reasons.

Professor Johnson examines every single tree high, low and from all sides, and I want you to know that this is the first essential of good cruising. He misses little in the way of cull, crook, sweep, defect or change in tree vigor. His diameter tape is always straight about the trunk. All tree lengths are taken with a long pole and the measurements are good. I doubt if Jim ever missed a tree on plot or took one outside of the circle. He makes a complete diagnostic PAP tally of each tree and his records are sound because he follows his previously prepared guides, rules and standards to the letter.

Jim makes his observations thoroughly and quickly. His techniques are sound and his determination and energy seem almost boundless. All of these qualities are most essential in comparable and continuous forest inventory work.

CAL STOTT
Forester

ANOTHER PURDUE PROJECT SET UNDER WAY IN OCTOBER

It has been worthwhile, I think, and a great pleasure to be sure, to work on occasion with forest school students. This year my chief claim to helpfulness has been in providing thesis material. You might say that for many years I have been collecting pertinent facts about the forest for study and assimilation at the academic level. Of course I do not do this myself. The Branch of Cooperative Forest Inventory and Large Ownership Management in the Division of State and Private Forestry has done it for the Purdue University School of Forestry and Conservation. (What terrifying titles we live with and work under in government service. I once had the grave honor to bear the title of Associate Forest Code Examiner, but so far as I remember, I never once examined a code.)

Anyway, the Service provided Purdue with annual growth records dating back to the spring of 1945. We are sure the Doctorates earned through the years with these data will have a firm foundation in fact, and that the papers prepared will be masterpieces of professional perfection. It is anticipated that certain bits of these reports will appear from time to time in the CFI letter. The material all has a bearing on the science of ecological sampling or CFI.

BE CHARY OF COST COMPARISONS OF CFI
WITH ONE-SHOT CRUISES. IT DOES NOT
COST 66% MORE TO SET OUT PERMANENT
PLOTS THAN TEMPORARY PLOTS OF ANY
KIND, UNLESS THE STANDARDS OF PERSONAL
ACCURACY DIFFER, THE DETAIL COLLECTED
VARIES SIGNIFICANTLY, OR THE CRUISERS
ARE POORLY TRAINED ON PERMANENT PLOT
PROCEDURES

CLEAR CUT NORTHERN HARDWOODS

In regard to clear cutting the northern hardwood forest growing on a good site -- certain individual tree selection operations dating back 20 to 30 years which I have known show mighty fine sawlog stands today.

One area of this kind, with more than 44,000 acres of residual timber, has provided us with 4,000 to 5,000 individual tree card records. Nine random selections of sawlog trees with a 27-year growth interval give a 4.3% net Scribner board foot growth and a value increment of 7.0%. Watch the CFI letter next year for the complete growth component results to be compiled from these tree cards.

THE GROWTH OF NINE TREES
OVER A 27-YEAR PERIOD

	<u>NET VOLUME SCRIBNER</u>		<u>NET VALUE DOLLARS</u>	
	<u>1938</u>	<u>1964</u>	<u>1938</u>	<u>1964</u>
Sugar maple	242	359	\$ 9.10	\$12.46
Sugar maple	232	400	9.19	13.13
Basswood	58	107	.70	1.52
Basswood	204	363	6.41	16.75
Basswood	80	163	1.12	6.05
Sugar Maple	121	326	1.97	11.75
Yellow birch	92	260	2.10	14.74
Sugar maple	56	194	.34	6.81
Sugar maple	28	233	.17	7.14
Totals - all species	1,113	2,405	\$31.10	\$90.35

POPULATION EXPANSION PROBLEMS ARE AS OLD
AS WRITTEN HISTORY, FOR WAS IT NOT ISIAH
WHO SAID, "WOE UNTO THEM WHO PLACE HOUSE
TO HOUSE, AND FIELD TO FIELD, UNTIL THERE
IS NO PLACE FOR EACH TO GO AND THINK."

MENOMINEE ENTERPRISES INCORPORATED - NEOPIT, WISCONSIN

A whale of a lot of work there is in a 910-plot CFI involving 31,916 tree cards from 225,547 acres of forest land. But this work is in the past now, and the Menominee Industrial Forest has complete inventory coverage for the first time in its 100-year history. Analysis of results is the next step and the first week in December is the time set for this work in Madison, Wisconsin.

The Forest Service feels complimented that it is given a share of the responsibility for this analysis. It is always interesting to review the results of forest inventory and to begin to extract essentials for the establishment of management policies, plans and cutting budgets.

THE COPPER RANGE COMPANY OF HOUGHTON,
MICHIGAN ESTABLISHED THEIR FIRST PLOTS
FOR THE STUDY OF GROWTH IN SELECTIVELY
CUT NORTHERN HARDWOOD IN JANUARY, 1940

THE COPPER RANGE COMPANY - HOUGHTON, MICHIGAN

In the fall of 1965 this mining company will make the first 5-year remeasurement of 628 CFI plots distributed mechanically over 182,000 acres of land. The forest is located in the Houghton and Keweenaw country of far northern Michigan. Preliminary studies are now in progress to guide and facilitate the plot work and to measure the financial structure of the entire forest. Cost and value simulation studies under intensive forest management plans are being made. The search for a ready and lively market for low grades and small sizes has been intensified so that cultural practices may be given greater emphasis in operating schedules. Ultimately the past and anticipated forest accretion values over long periods of time will be studied. Value increment from selective cutting over shorter intervals will also be given thorough analysis. CFI growth and depletion records should contribute materially to these company researches in forest finance.

PORT-A-PUNCH IS PAYING OFF IN REGION NINE
INDUSTRIAL INVENTORIES. WITH PAP IT IS
POSSIBLE TO PUNCH, FULL, PATCH AND PUNCH
AGAIN. IT IS UNWISE, HOWEVER, TO MIX 80-
COLUMN PUNCHES WITH PORT-A-PUNCHES IN THE
SAME PORT-A-PUNCH CARD

OWENS-ILLINOIS GLASS - TOMAHAWK, WISCONSIN

The last week in October, 1964 saw the last of 451 CFI plots remeasured at Owens-Illinois Glass in northern Wisconsin. More than two months were needed by four two-man crews working almost full time to complete the work. This is the third measurement in a six-year period on 178,000 acres of company land. Volumes, growth records and mortality losses are now being compiled in the Toledo office of the company.

All three sets of tree measurements are being computed with the new EDP volume formulas as a check on previous calculations of growth.

The cruiser's report and the measured checks show that the correlation between the three successive measurements in this case was excellent for all tree dimensions and descriptions.

WE CONTINUE TO RECEIVE INFORMATION
INDICATING THAT POINT SAMPLING
VOLUME ESTIMATES EXCEED THOSE FROM
FIXED RADIUS PLOTS. WHY IS THIS?

KIMBERLY-CLARK CORPORATION IN
MICHIGAN, WISCONSIN, AND MINNESOTA

Having completed field work on the remeasurement of more than 1,700 fixed radius plots in the fall of 1963, Kimberly-Clark has since spent considerable time on the data processing using the 7070 computer. At present the computing center and the foresters are working on the interesting task of documenting both their machine programs and the field instructions. This information in complete detail and in the simplest possible form and arrangement, will be sent to the Company's forest land managers in the southern States and California for review and possible use, with modifications to fit local inventory methods and conditions.

We look forward soon to reviewing the Company's completed statistical checks on the CFI measured volume, volume growth and area of forest condition classes.

FORD FORESTRY FOUNDATION - L'ANSE, MICHIGAN

Working together this fall, the Ford Forestry folks and this Branch completed the third comparative measurement of 138 permanent plots dating from the spring of 1938. Between 4,000 and 5,000 tree cards are involved.

A four-way cooperative venture with the forest industries to cover the data processing is now under thoughtful consideration. With success in the plans, this deck of Ford Forestry cards will serve as a test deck for the more than 30,000 cards in the industrial case.

THE INDIANA STATE FOREST INVENTORY

The question is always raised, where an owner contemplates a CFI, "How many plots per day will a crew establish?" The answer varies with accessibility, size of timber, kind and volume of data gathered, and crew experience. Six weeks of progress provide one answer to this question for the central hardwood hills of Indiana. The table following shows - per crew and per week - the number of plots established, the trees per plot and the number of trees measured.

Our original estimate was two plots per crew per day on the average for the job. With approximately one-third of the job completed, all crews have achieved, or are close to, that level. The establishment rate may still be expected to rise, and barring a prolonged severe fire season and unreasonably cold or snowy weather, the original estimate should be attained and perhaps surpassed. These gains have not been at the expense of accuracy. In fact, accuracy has improved as the crew members have mastered the instructions and techniques involved.

Week	CREW A				CREW B			
	Plots		Trees		Plots		Trees	
	Per Week	Per Day	Per Plot	Per Day	Per Week	Per Day	Per Plot	Per Day
9/20	4	.8	30	22	3	.6	23	14
9/27	6	1.2	26	31	4	.8	33	27
10/4	5	1.0	37	37	4	.8	30	24
10/11	7	1.4	27	37	5	1.0	25	25
10/18	7	1.4	29	40	5	1.0	37	37
10/25	10	2.0	32	63	10	2.0	26	52
Average	6+	1.3	30	38	5+	1.0	29	30

Week	CREW C				CREW D			
	Plots		Trees		Plots		Trees	
	Per Week	Per Day	Per Plot	Per Day	Per Week	Per Day	Per Plot	Per Day
9/20	3	.6	31	18	4	.8	20	16
9/27	4	.8	29	23	5	1.0	26	26
10/4	4	.7	40	28	9	1.8	18	32
10/11	4	.9	32	29	6	1.2	35	42
10/18	6	1.3	32	41	8	1.7	21	36
10/25	8	1.6	27	43	10	2.0	20	41
Average	5	1.0	32	25+	7	1.4	23	32

THE WINTER MONTHS ARE FOR PROGRAMMING IN THE NORTH COUNTRY

Programming for the completed field data of the Bureau of Indian Affairs and also for the Mead Corporation will be under way during the winter months. These data processing jobs seem to drag with electronic automation where assistance from a programmer is so essential.

THE FORESTER WITH CFI DATA TO PROCESS WILL FIND IT UNWISE TO PLACE COMPLETE DEPENDENCE UPON THE PROGRAMMER. NOT ONLY SHOULD THE FORESTER BUILD COMPLETE BLOCK DIAGRAMS FOR THE CASE BEFORE THE PROGRAMMING BEGINS, BUT HE SHOULD AID THE PROGRAMMER IN EVERY STEP OF THIS TEDIOUS AND PARTICULAR TASK.

OWENS-ILLINOIS IN THE DEEP SOUTH

"We have just completed the remeasurement work on 1,330 plots and established 35 more. All trees (about 25,000) are now paint numbered with Nel-Script paint. Three years ago we paint numbered about 2,500 trees with Eagle oilers. These numbers have withstood the elements, the bark-sloughing tendency of Southern pines, and the heat of control burning. We had no difficulty in identifying all of the paint-numbered trees, whereas we did have a few tagged trees without numbers this time. (One plot had three or four "lost" tags because a fire had melted the nails and tags, yet the tree-marking paint we had used to spot the trees was still visible!)"

"Hardwood species, particularly the gums, have the tendency to grow a callus around the nails. This callus growth is not as serious as it is on the Lake States Maples, but is still a major consideration."

"We experienced some difficulties with the metal tubes breaking or leaking along the bottom seam. Perhaps a more durable package for this type of application could be developed by using the plastic "squeeze-bottle" principle."

"A brief comment on the Port-A-Punch system is also in order, I believe. This has been quite successful on our job, except that the original order of cards from IBM were warped and somewhat troublesome to process. A re-order shipment was seemingly of the same paper stock, but did not warp as badly and processed through EAM equipment much easier. Field men who have worked with both Mark-Sense and Port-A-Punch definitely prefer the P-A-P system."